₩ WELLOGIX

January, 2000

Drill a Well from Your Living Room?

(No, but in the near future, electronic commerce may allow you to do almost everything but...)

By Jeff Livesay, Vice-Chairman & CEO, Wellogix, Inc.

Electronic commerce, or e-commerce (EC), is rapidly penetrating every major industry in the world. Industries predisposed to technology (computers, telecommunications) have already developed extensive e-commerce infrastructures. Other industries, including oil and gas, have been somewhat slower to adopt the Internet as a daily business tool for commerce. Many oil and gas veterans still view the Internet and electronic transactions as too much of a change over traditional ways of doing business.

But the simple, unavoidable truth about e-commerce is that it is inevitable, and that it is already changing the way business is conducted in the oil and gas industry. The good news is, e-commerce will change business for the *better*.

The Internet is the next great step in the evolution of business. With the Internet, companies have access to faster, more efficient avenues of communication than any they have previously employed. Whereas the fax machine seemed an essential business tool of the late 20th century, in the early 21st century, faxes will become obsolete, along with many other manual steps and inefficient business processes that will simply vanish.

With e-commerce, companies will enjoy time- and money-saving improvements that streamline business practices and increase profit margins. An August 1999 report from Giga Information Group (GIG) predicts that e-commerce will save businesses $1.25 trillion in 2002, about half of that outside the United States. Typically, cost savings produce 60-80 percent greater profit margins than increases in sales revenue. Because of this, GIG predicts that U.S. businesses will realize between $360 billion and $460 billion in profits from Internet-based cost savings. This provides a positive "double whammy" for oil and gas companies that embrace e-commerce as activity and sales increase from recent lows.

Savvy executives and managers in the oil and gas industry are finally moving to embrace the Internet - not because they must, or because of the need to Õmodernize' - but because the Internet is a moneymaking machine unparalleled in the history of business. And most experts agree that e-commerce is still very much in its infancy. There is literally no way to accurately predict how powerful e-commerce will eventually become.

One often cited Forrester Research report predicts $1.3 trillion in business-to-business (B2B) e-commerce by 2004. Another report by Goldman-Sachs entitled "B2B: 2B or not 2B?" predicts $1.5 trillion in B2B e-commerce in the same timeframe. Estimates for up to 1.6 million web sites by 2002 predict that B2B will account for 80 percent of them. A tidal wave of strategic transformation and globalization is overtaking business. The results will be decreased cycle time, increased speed, and greater competitiveness. But e-business isn't strictly a technological change – it is a fundamental change in the way business is done, enabled by technology.

So how will the growing influence of Internet-based commerce affect the oil and gas industry?

The Oil and Gas Industry

The oil and gas industry continues to recover from tight times and is undergoing a period of megamergers and acquisitions. Oil and gas companies, from the largest conglomerates to the smallest independents, are looking for ways to reduce costs and improve capital efficiency. At the same time, these companies are looking to accommodate increased activity to grow their sales, but without attendant staffing increases. Technology, especially e-commerce, will allow them to do so.

With e-commerce technology, companies gain the necessary leverage to do more with less. E-commerce

can eliminate many of the industry's current problems that are caused by inefficient, time-consuming business practices: no more long-distance phone calls repeating the same purchase requirements over and over; no more faxes or overnight shipment of permits, bids, and AFEs. Wasteful photocopies and endless phone tag will be a thing of the past.

These practices, particularly paper-based standards, will become permanent relics of history as 21st century e-commerce practices become established and accepted norms. Oil and gas companies will still perform the same basic functions, but the *new ways* in which they perform these functions will seem effortless to someone accustomed to the tedious, manual business practices of today.

Changing Business Practices

One of the major trends in e-commerce is online procurement. As business-to-business e-commerce matures, it will trend away from imitations of business-to-consumer web sites. The trend will move away from "home pages" for individual sellers containing online catalogs, away from "portals" for news and information, and trend *towards* centralized, independent trading hubs, frequented by many buyers and sellers within targeted industry niches. These hubs will streamline business processes and help people do their jobs better, faster, and cheaper.

Online trading hubs are rapidly appearing in industries from steel (www.esteel.com) to plastics (www.plasticsnet.com) to chemicals (www.chemdex.com). Early trading hubs have already begun to appear in the oil and gas industry. Some hubs offering commoditized, price-only goods (such as casing strings) will resemble auctions. Other hubs will resemble online classifieds and catalogs for used and new equipment.

Other trading hubs, called exchanges, will provide two-way e-commerce, both buyer-driven (like Priceline.com) and seller-driven (like Amazon), on which buyers can transmit the need for goods and services to sellers who provide instant links to virtually unlimited information on their products. Exchanges are predicted to become the most prevalent form of online procurement in the future B2B e-commerce world. Ford's announced plans for the upcoming AutoXchange sent shockwaves through the automobile industry in the fourth quarter of 1999. Upstream oil and gas professionals can expect an "E&P Exchange" to appear soon. Analysts predict that one or at most two dominant exchanges will emerge as the standard trading hubs for B2B e-commerce in most industries.

Online Service Providers

Another major trend in the evolution of e-commerce is the emergence of Application Service Providers (ASPs) and Commerce Service Providers (CSPs) which offer cost-efficient, streamlined business services through the Internet. You've probably heard of and most likely use an Internet Service Provider (ISP) that "rents" access to the Internet. ASPs and CSPs are basically vendors that host and rent server-based software and financial services to any customer with a web browser and an Internet connection.

Instead of spending hundreds of thousands or, in some cases, millions of dollars on large, in-house Information Technology (IT) departments, companies in the future will be able to outsource their traditional IT functions to ASPs that excel in providing cost-efficient IT services. ASPs will provide application services in a wide variety of areas, including database management, financials, enterprise resource planning, operating resource management systems, customer relationship management, and especially, procurement. By outsourcing many of their IT needs, oil and gas companies will then be able to focus on their bread and butter - producing hydrocarbons - and get out of the business of running huge IT organizations. Similarly, CSPs provide banking, data warehousing, and web-related services, allowing large companies to reduce or eliminate this internal responsibility, and, as importantly, allowing smaller companies the ability to afford first-class results through outsourcing.

ASPs and CSPs are less expensive than "do-it-yourself" internal approaches because they concentrate and apply the same resources to solve the same problem for multiple organizations. By doing this, ASPs and CSPs are able to achieve economies of scale that individual organizations cannot hope to match. These services offer a superior infrastructure with improved business adaptability, and rapid deployment schedules. One of the key benefits of these services is the much shorter time period required to install and implement new applications within a business. Vast reductions in training time are possible due to the common user interface for ASPs and CSPs Ð a web browser.

Additionally, the "rent" for these services is flexible according to the target company's resources and needs. The rent can vary from a monthly subscription price for prescribed levels of usage, or can be based on a per-transaction model where charges are levied for utilization of bandwidth, storage, central processing units (CPUs), and per database transaction. Which leads to another central trend, the global push towards a transaction-based economy.

The Transaction-Based Economy

Many businesses are moving from subscription-based revenue models to more efficient transaction-based models. In the future, rather than paying a subscription fee to receive a monthly printed report of, say, detailed tables on offshore drilling rigs, oil companies may instead pay a few pennies each time they access a computerized database of drilling rigs through the Internet.

That database would always be current, rather than out-of-date by at least the amount of time it takes to conventionally print and deliver the information. The publisher of the information probably won't change, but the delivery mechanism will. The information will be more highly targeted, and will be billed based upon actual usage rather than through wasteful subscription fees.

Working From the Soccer Field

A final key trend, one that will make the most dramatic improvement in people's lives, will be the ability to work from anywhere. With the proliferation of web-enabled devices and the ubiquity of the Internet, we will see enormous improvements in the way we work, commute, and play. You won't have to miss your daughter's soccer game just because a pumping unit has gone down in the field. Through a handheld Personal Digital Assistant (PDA) connected wirelessly to the Internet, you'll be able to electronically request and accept bids for a replacement unit without missing your daughter scoring the winning goal!

Key Technologies

Many key technologies are emerging that promise to determine the direction e-commerce will take. The most important of these technologies is also the simplest Ð the ubiquitous web-enabled device. This does not necessarily imply a browser-enabled computer. Wireless devices such as cell phones and personal digital assistants can already access the web and can be used to conduct e-commerce transactions. As the Internet matures, it will become more and more transparent, much like a utility, and the proliferation of Internet-capable devices will keep us "always connected."

Which leads to the second key technology Ð telecommunications. Rapid advances in wireless telecommunications, especially broadband wireless, will expand the reach of the Internet beyond the proverbial "last mile from the curb" that currently prevents broadband access in many homes and businesses.

Broadband wireless will put voice, video and data into our vehicles, wristwatches and refrigerators in less than five years. This is not Dick Tracy or George Jetson-style science fiction Ð it is commercial fact. Numerous trials underway around the globe today are demonstrating the viability of low-cost broadband wireless communications. Third generation cellular phones using advanced satellite networks will allow web browsing and videoconferencing from anywhere on the globe. In the very near future, oil and gas professionals will have the ability to request bids or respond to bid requests from a cellular phone, or from the dashboard of their car. And soon after that, buyers and sellers will be able to interact from these web-enabled devices.

Using the same technology, operators will be able to view wellbore data real-time, using a down-hole fiber sensor that transmits, via broadband satellites and satellite dishes, directly to an operator's headquarters. Everything from open hole logging data to full-motion video will be transmitted directly from the well site to headquarters as easily for small independents as for large companies.

A third key technology is advanced software, including further standardization of programming definitions and data models for objects as simple as drill bits and sacks of cement to more complicated objects like jack-up rigs. Artificial intelligence is maturing from its promise-filled laboratory heydays of the late 1980s and emerging in less ambitious corporate applications. These applications of limited machine intelligence, now dubbed Knowledge Management, allow knowledge bases filled with corporate expertise to be embedded behind web interfaces and served up for common user access as "experience warehouses" and "automated common sense."

Knowledge management, combined with e-commerce, allows powerful automated reutilization of buying patterns and trends to further streamline purchasing activity. Purchase orders for regularly scheduled services and predictable replacements for certain goods will be automatically generated, for example, and intelligent diagnostics will determine when irregular services should be requested. Smart down-hole devices and intelligent server applications will eventually work hand-in-hand to determine and automatically recommend remediation needs, and to initiate requests for bids on, for example, stimulation services.

Security Issues

If man can build it, man can break it. Security and privacy have been critical issues throughout the history of business, and will be ongoing concerns with e-commerce, as well. Just recently, a glaring security gap was discovered in email that allows third parties to monitor someone's web usage patterns. Virtually anyone on the Internet could play big brother with these kinds of security holes. The coming Internet2 will tighten security in many ways, but there will always be risks to e-commerce over the Net. The bottom line is that there will be more security safeguards, some of which will be mandated by government.

The key is to keep Internet security and privacy risks in perspective. Studies have shown that purchasing something over a Secure Socket Layer Internet connection is more than 1,000 times safer than using a credit card to make a purchase at a restaurant. As long as companies adhere to best practices and security standards, the security risks with e-commerce are far lower than, for example, sending a printout of your customer list to your competitors via the trash dumpster behind your building.

Who will be drilling wells in 15 or 20 years?

The oil and gas industry is widely acknowledged as an "old-boys network" in which change is sometimes slow to take hold. To an extent, there are very good reasons for this Ð oil and gas companies have been extremely successful using basically the same business practices for decades, so it's hard to make convincing arguments that a change would be an improvement over practices that already work.

But many Ôold guard' oil and gas professionals will retire as the baby-boom generation follows its natural course. Today, numerous "petropreneurs" are moving up the ranks and doing business in innovative and more efficient ways. These "next generation" E&P entrepreneurs are able to take the good pieces of traditional business models and combine them with modern technology to create new standards of efficiency in exploration and production. Petroleum engineers matriculating from universities today are armed with technological weapons that compare to fax machines the way laser-guided missiles compare to stone clubs. Some big businesses that fail to adapt may be crushed.

This new generation is extremely comfortable with the Internet and emerging technologies, and will deftly use technology to seize business opportunities faster and at lower cost than traditional, inefficient methods. These nimble, quick to adapt petropreneurs will compete with the megamerger monoliths that will need to learn ways to accept rapid change or be outmaneuvered. In 15 or 20 years, the drilling industry will consist primarily of two kinds of players: the nimble, aggressive, tech-savvy petropreneurs, and the conglomerates that acted to rapidly embrace and adopt e-commerce. The slow-to-react dinosaurs will most likely become extinct.

back to top